Patent Claims

1. Electromigration test apparatus having:
a direct-current source;
an AC voltage source;
a circuit having at least one conductive structure to be tested, which is electrically coupled to the direct-current source and the AC voltage source; and
a measuring device, which is set up in such a way that it detects an electrical parameter which is indicative of electromigration in the conductive structure to be tested;
the AC voltage source being set up in such a way that it exposes the conductive structure to be tested to an alternating current, independently of a direct current of the direct-current source and thus heats the conductive structure to be tested to a predetermined temperature that can be set.

2. Apparatus according to Claim 1, the electrical parameter being a resistance of the conductive structure to be tested.

3. Apparatus according to Claim 1 or 2, which furthermore has an evaluation unit for determining an electrical power, the evaluation unit having a voltage measuring device and a current measuring device which are implemented in the circuit in such a way that, by means thereof, a root-mean-square current through the conductive structure to be tested and a root-mean-square voltage across the conductive structure to be tested can be detected.

4. Apparatus according to one of Claims 1 to 3, a control device being provided, which is set up in such a way that the control device controls the AC voltage source in such a way that the temperature

of the conductive structure to be tested can be kept constant.

5. Apparatus according to one of Claims 1 to 4, the conductive structure to be tested being arranged on or in a semiconductor wafer.

6. Apparatus according to one of Claims 1 to 5, the alternating-current source and the direct-current source being integrated in a pulse generator.

7. Apparatus according to one of Claims 1 to 6, which furthermore has a heating furnace set up in such a way that it heats the conductive structure to be tested.

8. Method for testing a conductive structure for electromigration, having the following steps:
electrical coupling of a conductive structure to be tested to an electrical circuit electrically coupled to a direct-current source and an alternating-current source;
supply of the conductive structure to be tested with a direct current which causes the electromigration within the conductive structure to be tested;
heating of the conductive structure to be tested by means of the alternating current, the alternating current being independent of a direct current, which direct current brings about the electromigration within the conductive structure to be tested; and
detection of an electrical parameter which is indicative of the electromigration within the conductive structure to be tested.

9. Method according to Claim 8, a resistance of the conductive structure to be tested being detected as the electrical parameter.

10. Method according to Claim 8 or 9, in which, as further steps, a root-mean-square current in the conductive structure to be tested and a root-mean-square voltage across the conductive structure to be tested are detected and an electrical power is determined therefrom.

11. Method according to one of Claims 8 to 10, the temperature of the conductive structure to be tested being regulated to a constant value by means of the evaluation unit.

12. Method according to one of Claims 8 to 11, the conductive structure to be tested being formed on or in a semiconductor wafer.